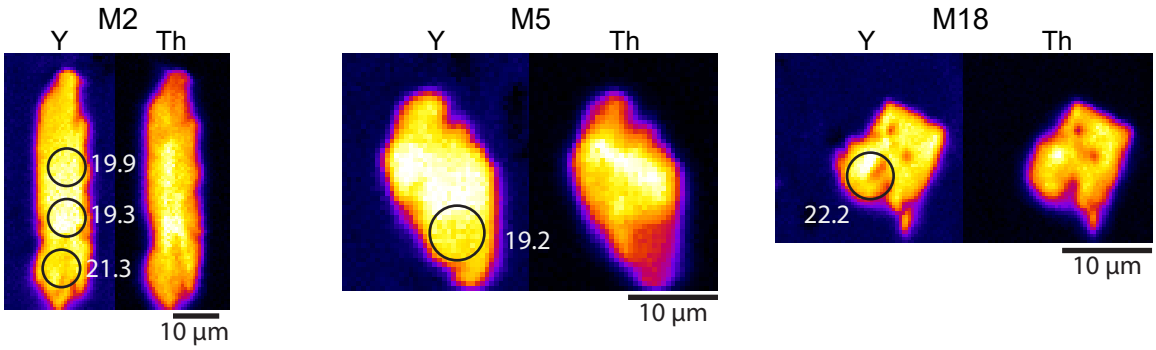
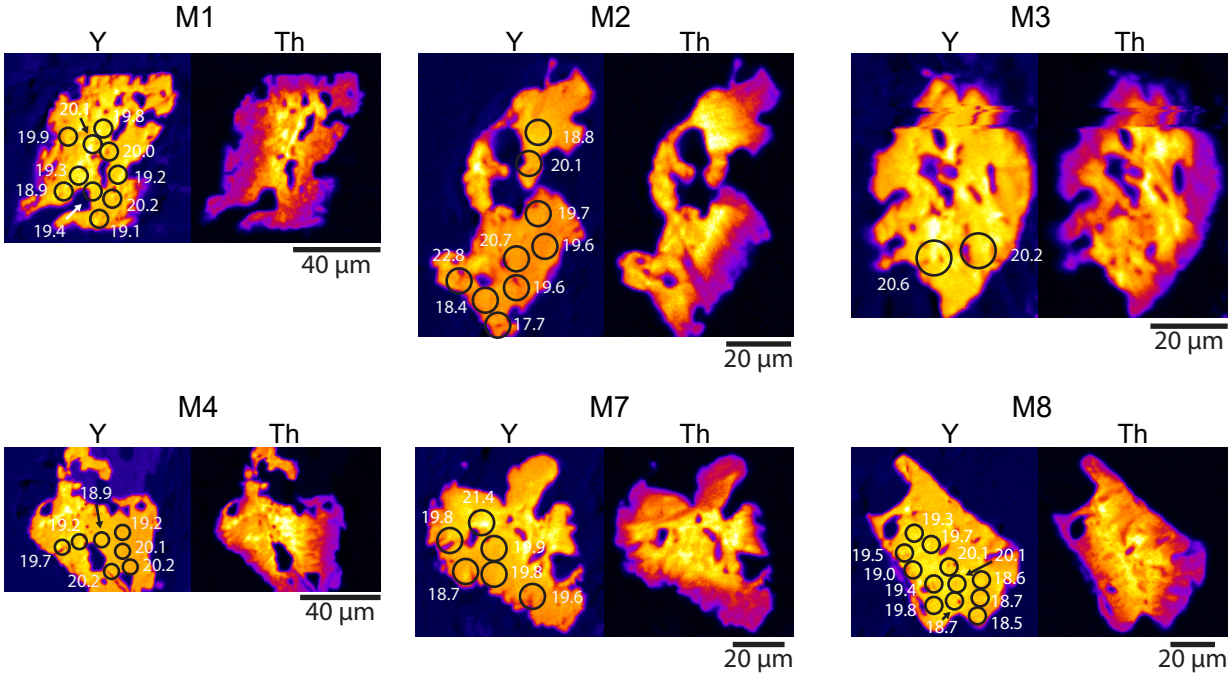
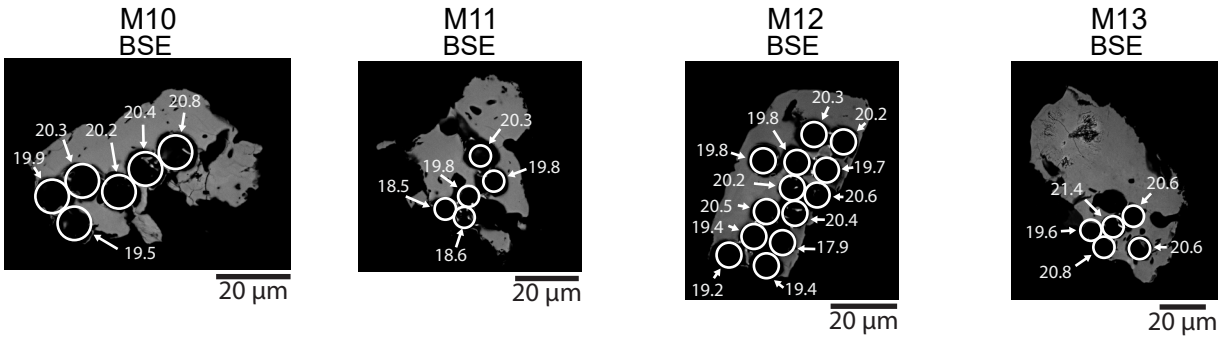
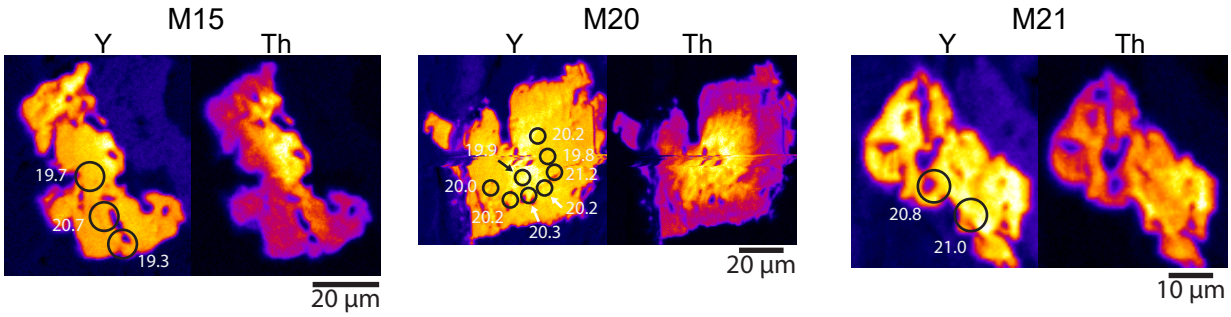
UM05



UM07







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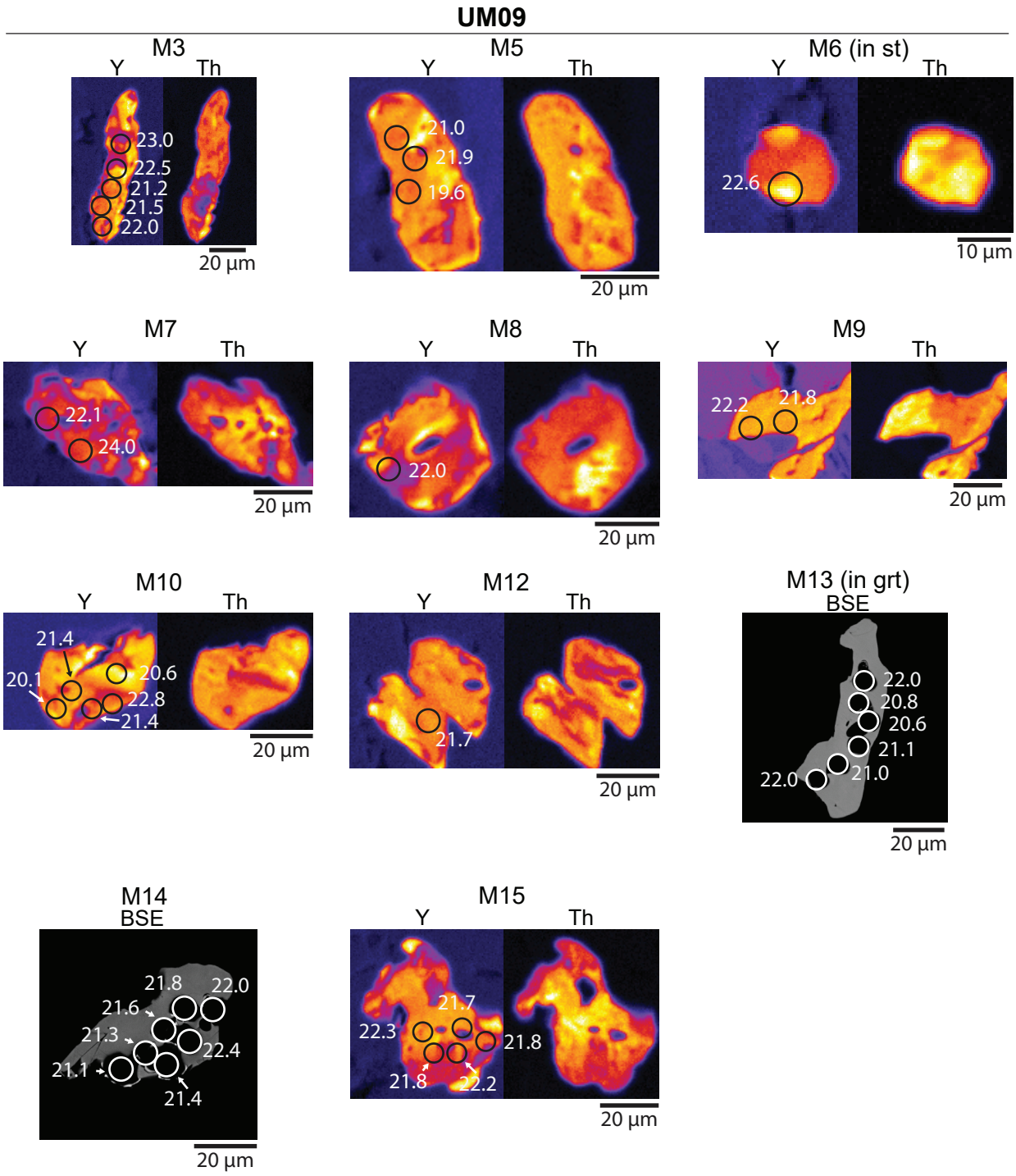

Figure S1. Monazite X-ray (Y and Th) maps and backscattered electron (BSE) images for metamorphic specimens UM05, UM07 and UM09. Black/dark purple colour represents the lowest concentration, while yellow/white represents the highest concentration of each element.

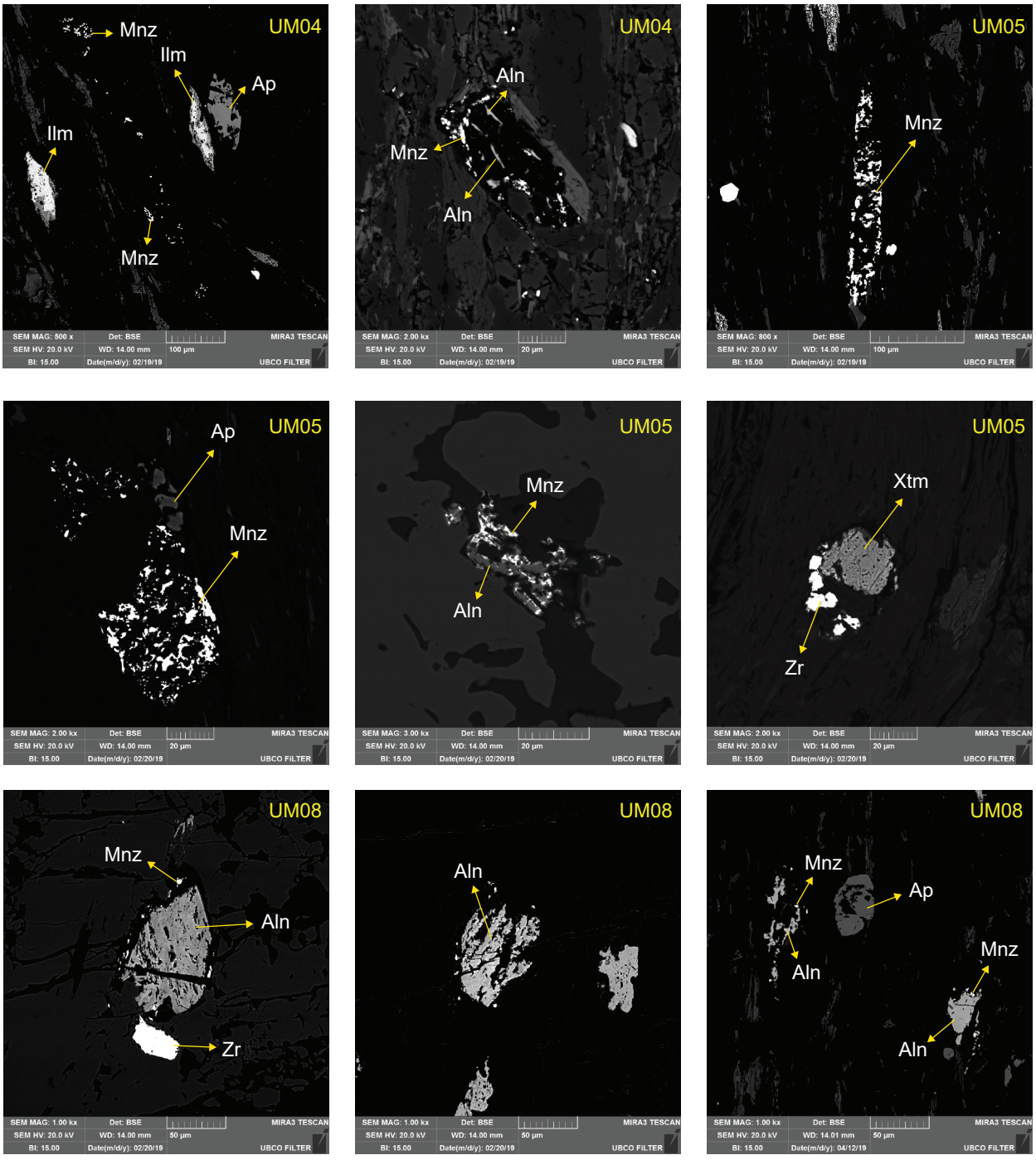

Figure S2. Accessory minerals in metamorphic specimens UM04, UM05 and UM08. Apatite and allanite occur as common phases in specimens with monazite scarcity. Allanite is partially replaced by monazite.

Dataset S1

Parameters used for calculations:
Thermal diffusivity: 31.5 m^2/year
Initial temp. of magma: 750 °C (Montel, 1993; Godin et al. 2006)
Radius/half-thickness of a pluton: 10 000 m
Distance from the pluton: 22 m (UM09), 361 m (UM07), 445 m (UM05), 1 500 m
Time: 0 (0.1 in error function), 10 000, 100 000, 500 000, 1 000 000, 2 000 000 years
Initial temp. of rocks: 0 °C, 450 °C* (geothermal gradient 25 °C/km at 18 km depth)
* initial temperature used in calculation as in Jaeger, 1964; 1968

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Jaeger, J.C. 1964. Thermal effects of intrusions. Reviews of Geophysics 2(3), 443-466.

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Montel, J.M.. 1993. A model for monazite/melt equilibrium and application to the generation of granitic magmas. Chemical Geology 1, 127-146.